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A Note on Bees of the genera *Xylocopa*
and *Bombus* in the Indian Museum.

By
C. DOVER.

CALCUTTA:

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A NOTE ON BEES OF THE GENERA *XYLOCOPA*
AND *BOMBUS* IN THE INDIAN MUSEUM.

By CEDRIC DOVER, F.E.S.

The accumulation of a large amount of unnamed carpenter- and bumble-bees in the collection of the Zoological Survey of India has led me to attempt their identification; and, as, though no novelties were among them, my results are not quite without interest, I have drawn up the following short note in the hope that it will prove useful.

Subfamily *XYLOCOPINAE*.¹

Xylocopa tenuiscapa Westw.

1921. *Xylocopa tenuiscapa*, Dover, *Rec. Ind. Mus.* XXII, p. 389.

In the paper quoted I have given references to works which give characters by which the female of *X. latipes* and *X. tenuiscapa* may be readily separated, and I have also quoted Maidl, who regards Sichel's *albofasciata* as the female of this species. "In Bingham's description of the male for tibiae read basitarsi" (Cockerell).

The Indian Museum possesses a specimen from Tenasserim which is probably a *latipes* ♀ but differs from it in being much larger (about 37 mm.) and there are two deep dents on either side of the disc of the mesonotum, which is smooth and brightly polished.

Xylocopa acutipennis Smith.

The Indian Museum has examples from the following localities unnoticed by Bingham: Darjiling District, above Tura in the Garo Hills of Assam, 3500 ft., and the Dawna Hills in Lower Burma, 2000-3000 ft.

Xylocopa attenuata Perez.

1852. *Xylocopa pictifrons*, Smith, *Trans. Ent. Soc.* (2) XI, p. 42, ♀ nec ♂.

1897. *Xylocopa pictifrons*, Bingham, *Faun. Brit. Ind. Hym.* I, p. 538, ♂.

1901. *Xylocopa attenuata*, Perez, *Act. Soc. Linn. Bordeaux* LXXV (6) VI, p. 46, ♀.

1912. *Xylocopa attenuata*, Maidl, *Ann. Nat. Hofmus. Wien* XXVI, p. 287.

1921. *Xylocopa attenuata*, Dover, *Journ. Bomb. Nat. Hist. Soc.* XXVII, p. 961.

The species is found sparingly in the Indian plains, and commonly in Sikkim and Kumaon. It is found also in China,

¹ I have thought it best in this note not to recognise the genus *Mesotrichia*.

Java, Formosa and the Malay Peninsula. Some confusion has existed as to the sexes of the species described by Smith and Bingham as *pictifrons*, but this has been admirably cleared up by Maidl in his paper. He regards the male described by Smith as typical *pictifrons*, while Bingham's male and Smith's female are a separate species for which he has adopted the name *attenuata* of Perez.

Xylocopa auripennis Lepel.

In addition to the localities noticed by Bingham, the Indian Museum also possesses specimens from the Darjiling District, the Naga Hills and Sibsagar in Assam, South India and Nepal. The species is supposed to be mimicked by a Sphingid moth (*Sataspes hauxwelli*), which according to De Niceville (*Journ. Bomb. Nat. Hist. Soc.* XIII, p. 174) was "a beautiful mimic of the very common large blue carpenter-bee *Xylocopa auripennis*, Lepeletier." The wings of the moth are a deep indigo-blue with bronze markings, which scarcely resembles the wings of the bee, and in the cabinet the whole insect seems entirely different.

De Niceville does not say that the bee and the moth were taken together, and in the absence of definite field-observations, the moth has little claims to being a mimic of the *Xylocopa*.

Xylocopa dissimilis Lepel.

The Museum has specimens from Bangalore, Bandra in the Bombay Presidency, Mong-Wan in Yunnan (W. China) and Southern China.

Xylocopa fenestrata Fabr.

? *Xylocopa bombayensis*, Cam. ? M. S.
1921. *Xylocopa fenestrata*, Dover, *Rec. Ind. Mus.* XXII, p. 390.

In the paper cited, I have noticed what appears to be an aberration of *X. fenestrata* from Barkuda Island in the Chilka Lake, with a comparatively large, and a small, almost reniform, hyaline marking on each of the hindwings. The Indian Museum possesses another specimen from Hamirpur Road in the United Provinces (*Caunter*, x'11), which has the lower halves of the wings semi-hyaline. The fact that Kling described an example with semi-lunate, hyaline markings on the hindwings under the name *lunata*, makes me now think that aberrations of this species, with hyaline markings of some sort on the wings are perhaps not uncommon. It might be of interest to note here that I remember to have seen a specimen of the closely allied African *X. carinata* with an irregular hyaline patch on the right forewing. Can it be that these markings are caused by injuries sustained in the early stages? *X. fenestrata* is a common Indian species, extending as far Celebes on the south-east and probably into Australia, and Madagascar on the south-west. It does not penetrate into South Africa, but is replaced there by

X. carinata. Meade-Waldo has shown¹ that Cameron's *X. bombayensis* is a synonym of this species.

***Xylocopa amethystina* Fabr.**

Bengal, Chota Nagpur, Bihar and Sind are not recorded by Bingham. This is an apparently widely distributed species in India.

***Xylocopa bryorum* Fabr.**

The Museum has specimens from Assam and the Andamans.

***Xylocopa collaris* Lepel.**

This species is found in most parts of India, Burma and Ceylon and is known from Borneo, Sumatra, Java, the Philippines, Celebes and Malacca and from the Palaearctic Region.

***Xylocopa tranquebarica* Fabr.**

1804. *Bombus tranquebaricus*, Fabr., *Syst. Piez.*, p. 343.

1917. *Xylocopa tranquebarica*, Cockerell, *Philipp. Journ. Sci.* XII, p. 346.

1921. *Xylocopa rufescens*, Dover, *Rec. Ind. Mus.* XXII, p. 390.

Found in Sikkim, Bengal, South India, Burma, Andamans, Java, Sumatra, Borneo and the Philippines. There are three examples in the Indian Museum under the name *ferruginea* which I think really belong to this species. Prof. Cockerell has shown that the more generally used name *rufescens* will have to be sunk in favour of *tranquebarica*. He has also noted its crepuscular habits.

***Xylocopa caerulea* Fabr.**

This beautiful species has been found in Sikkim, Burma, Ceylon, Annam, Sumatra, Borneo, Java and New Caledonia.

***Xylocopa flavonigrescens* Smith.**

1918. *Xylocopa flavonigrescens*, Cockerell, *Entomologist*, LI, p. 104.

The Zoological Survey possesses examples from Sikkim, Sylhet, Tenasserim, Ton-Kin and Malacca. Meade-Waldo, basing his opinion on the male, thought Cameron's *malayana* (*Proc. Zool. Soc. Lond.* 1901, p. 32) to be the same as this species, but Prof. Cockerell notes that a female from the island of Penang is the same as *X. malayana*.

***Xylocopa nitidiventris*, *X. dubiosa* and *X. convexa* Smith.**

1878. Smith, *Scient. Res. 2nd. Yark. Miss. (Hym.)* pp. 7 and 8.

The types of these species, described from the neighbourhood of Yangihissar in Yarkand, are in the collection of the Indian

¹ *Ann. Mag. Nat. Hist.* XIV, p. 404, 1914.

Museum. The U.S. National Museum has specimens of *X niti-diventris* from Kukier, Eastern Turkestan.

Subfamily BOMBINAE.¹

Bombus montivagus Smith.

The Indian Museum has examples from Upper Tenasserim and Take-pum Mt. on the Chinese Frontier in N E. Burma.

A form has also been taken in Onari in British Garwhal, 11,000 ft., which has the colour of the pubescence on the apical three segments of the abdomen almost snow-white and not fulvous red.

Bombus lapidarius var. *tunicatus* Smith.

1897. *Bombus tunicatus*, Bingham, *Faun. Brit. Ind. Hym.* I, p. 549.
 1910. *Bombus tunicatus*, Cockerell, *Ann. Mag. Nat. Hist.* V, p. 417.
 1916. *Bombus lapidarius* var. *tunicatus*, Meade-Waldo, *Ann. Mag. Nat. Hist.* XVII, p. 467.

Following Meade-Waldo I consider *tunicatus* and Cockerell's *gilgitensis* to be varieties of the European *B. lapidarius* Linn. The Museum possesses specimens of the former variety from Garwhal, Simla Hills, Mussoorie, Nepal, and two examples from Calcutta. In *Nature* for May 19th, 1921, I recorded the capture of the two Calcutta examples and mentioned having seen what was probably a species of *Bombus* at the base of the Eastern Himalayas, as "bumble bees" are supposed never to descend below 3,000 ft. Burkill (*Journ. As. Soc. Beng. (n. s.)* II, p. 521, 1906) found *B. haemorrhoidalis* common in the N.W. Himalayas at 1,600 ft., but the capture of *Bombus* actually in the plains is astonishing, and it is probable that such an incident may never occur again, though I originally mentioned that these bees probably occur, very rarely, in the plains. There is an old record of *B. orientalis* in Calcutta which I think must be authentic; but as to how these strictly hill-species have been found here I can offer no explanation other than that these species of *Bombus* probably nest in the ground and have been conveyed here through the agency of man.

A fly, *Eriorhina imitator* cf the family Syrphidae, closely resembles this species and the case appears to be one of real mimicry. Brunetti in his original description (*Rec. Ind. Mus.* XI, p. 237, 1915) stated that it was a mimic of the bee *Bombus trifasciatus* (as understood by Bingham), but I think it will be admitted that it resembles *tunicatus* more closely in the light pubescence on the anterior parts of the thorax, on the scutellum, on the basal abdominal segments, and in the colour of its wings and legs. The pubescence on the apical abdominal segments is also reddish, but unfortunately, it is not quite so dense as in the bee it resembles. Hingston in *A Naturalist in Himalaya* (Witherby: 1920, p. 184) notices the resemblance of *Bombylius* to *Bombus* and of a species

¹ As the use of the term *Bremus* for *Bombus* is dependent on the validity of the "Erlangen" list, and this is still a debatable point I have preferred to use the more generally known name.

in part
montivolans
richards

montivagus - type
material

of *Bombylius* to *B. lapidarius* var. *tunicatus*. I have never noticed this myself and judging from his description I think it just probable that his *Bombylius* is really a *Criorhina*.

***Bombus eximius* Smith.**

The Darjiling District, Khasi Hills, Shillong, and Mong-wan in W. China may be added to the localities given by Bingham.

***Bombus flavescens* Smith.**

The Darjiling District, Nepal and Kumaon may be added to the localities given by Bingham.

***Bombus funerarius* Smith.**

There are specimens in the Indian Museum from the Western Himalayas. Col. Bingham remarks that individuals with the pubescence on the apical three segments bright orange-red instead of greyish have only been found in Sikkim, but I have seen an example from the W. Himalayas.

***Bombus alienus* Smith.**

1897. *Bombus? vallestris*, Bingham, *Faun. Brit. Ind. Hym.* I, p. 553.

1916. *Bombus alienus*, Meade-Waldo, *Ann. Mag. Nat. Hist.* XVII, p. 467.

This species (omitted from the "Fauna") was taken in October, 1903, by Mr. R. E. Turner in Shillong. *B. vallestris* agrees fairly well with the description of *alienus*, but as Smith's type of the latter species is not available in Calcutta, and his type and? cotypes of *vallestris* in the Indian Museum are almost unrecognisable, I can offer no definite opinion. Meade-Waldo says that it is probable that *vallestris* is synonymous with *alienus*.

***Bombus Bhaemorrhoidalis* Smith.**

The Museum possesses specimens from several localities in the Eastern and Western Himalayas.

***Bombus orientalis* Smith.**

To Mr. Paiva's list of the specimens in the Indian Museum (*Rec. Ind. Mus.* VIII, p. 80, 1912) I may add Yokohama and? Calcutta.

***Bombus longiceps* Smith.**

1910. *Bombus longiceps*, Cockerell, *Ann. Mag. Nat. Hist.* V, p. 505.

1916. *Bombus longiceps*, Meade-Waldo, *Ann. Mag. Nat. Hist.* XVII, p. 468.

The Museum possesses a worn specimen which is, I think, the type of this species from Leh in Ladak. It has also been taken by Captain Hingston in Kashmir. I agree with the authors cited that *longiceps* cannot be a variety of *hortorum*.

